

# FROM PHILOSOPHY TO KNOWLEDGE MANAGEMENT AND BACK AGAIN

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## 1. FROM PHILOSOPHY TO KNOWLEDGE MANAGEMENT

It is almost impossible to read an introduction to Knowledge Management (KM) without some mention of philosophy. Indeed, the KM literature is literally riddled with references to philosophers and philosophies. Yet surprisingly, despite the consistent mention of philosophical theory, it is rare to see any detailed connections made between the theory of knowledge *qua* philosophy and the practice of knowledge management.

In this paper I explore the relationship between philosophy and Knowledge Management. I look at how philosophical theory has contributed to the development of KM, and also at how additional philosophical insights can be applied to help further the enterprise of KM. In doing so, I point out some areas of philosophy that are of little relevance to KM, despite the attention paid to them in the KM literature. In particular, traditional philosophical discussions about epistemology are quite limited in their application to KM, since they focus on the *production* of individual or personal knowledge, rather than *sharing* and *use* of knowledge in a collaborative context. I then identify some ways in which philosophy can be relevant to KM, highlighting the areas of philosophical theory seem most promising in their practical application to KM. My suggestion is that the most promising theoretical insights for KM come from recent work in both the *philosophy of science* and *social epistemology*.

Before continuing, I must mention an important caveat to much of what I say in this paper. My background is primarily in philosophy, and I am a relative newcomer to the field Knowledge Management. Thus I approach the KM literature primarily from the perspective of a philosopher, aiming to interpret what KM is and to assess how KM appeals to various philosophical insights. Because of this much of my discussion is focused on introductory texts in knowledge management, and not on more detailed and more specific publications. Thus my focus is mainly on student textbooks as well as some of the expository works that first presented the theoretical foundations of KM. This source material should be more than sufficient for my purposes, since these works purport to present the foundational basis for KM, outlining the essential tenets of KM.

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Approaching the KM literature in this way has some clear advantages, as well as some obvious disadvantages. The main advantage is that I am approaching the KM literature with a fresh mind and a critical attitude, unburdened by preconceptions that others with more experience in this field may possess. In particular, coming to this work as a philosopher means I am particularly well placed to make assessments about the *soundness* of definitions and approaches in KM, and the accuracy and applicability of the various philosophical theories that are discussed. The disadvantages are that my own understanding of the scope and detail of work done under the label “knowledge management” is rather limited, and that certain subtleties and implications in the literature may pass me by. Thus I try to remain fairly cautious in what I say, and focus more on the use of philosophical theory in the KM literature rather than knowledge management per se.

My understanding of KM has been derived mainly from two sets of sources. The first sources are the various textbooks, websites and discussion papers that present the foundational concepts of KM to a relatively general audience. The second sources are the particular KM projects being undertaken within the KM Research Program at Monash University, School of Information Management & Systems. In particular, I have been most influenced by the Meteorological Forecasting project (Linger and Burstein, 2000). These two sets of sources portray KM in a fairly different way. The textbooks and expository literature tend to emphasise KM as being a business oriented discourse, and is it portrayed and discussed in such a way in the bulk of KM literature. Thus KM is defined as “the process in which a company both values its knowledge resources and seeks to manage it effectively within the main stream of company activities” (Gordon and Smith, 1998). Similarly “KM is the process through which organizations generate value from their intellectual and knowledge-based assets.”<sup>2</sup> Given that the KM discourse developed within organisational environments, and much of the work done under the label of KM is largely driven by management concerns in a business context, this approach isn’t too surprising. It also isn’t surprising that more theoretical questions about the nature of KM work have tended to be seen as peripheral. The clear purpose of KM is not to deal with any deep conceptual questions, but to basically drive company growth. This point is stated clearly in many introductory discussions on KM. For example, the website for CIO magazine CIO.com states that “A creative approach to KM can result in improved efficiency, higher productivity and increased revenues in practically any business function.”<sup>3</sup>

In contrast to this, the KM projects within the KM Research Program place less emphasis on the purely business oriented aims of company growth and increased revenues. Instead there is a clear emphasis on broader organisational goals. For example, in the case of the Meteorological Forecasting KM project the aim of the project is to develop a KM system that will assist with the task of generating weather forecasts. It achieves this by effectively integrating the skills and knowledge resources of the human forecasters with a technological system that stores, shares and assists with the product generation tasks of the forecasters. Here effective KM is primarily concerned with the relationship between the different participants in the forecasting process – the multitude of human forecasters, the technologies that assist their forecasting, the systems they use to store and distribute the forecasts, the products they generate, and the customers that

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<sup>2</sup> <http://www.cio.com/summaries/enterprise/knowledge/>

<sup>3</sup> *ibid.*

receive and use the forecasts. All of these are knowledge-based components of the broader system, and cannot be understood or managed without an intimate understanding of the relationship between all the parts of the system.

What this shows is that KM is primarily concerned with knowledge as it is generated, shared, stored and used within a collaborative environment. KM is also concerned with *all* aspects of knowledge within an organisational framework: the *factual* knowledge of the individuals within the organisation, as well as their *practical* knowledge, *tacit* knowledge, and *technological* knowledge. Thus if we are to look to philosophical theory to provide a foundation for the tasks of KM, we must look for those areas that can deal with these practical issues, as well as provide insights into these differing forms of knowledge and the relationships between them. The philosophical theory must also help our understanding of the underlying *processes* that are relevant for KM. Towards the end of this paper I shall explore some areas of recent philosophy that do offer insights into these processes. However before then I wish to spend a bit of time exploring the relationship between philosophy and KM, especially as regards the uses of philosophy in the KM literature.

## 2. KM AND THE APPEALS TO PHILOSOPHY

The relationship between the foundations of knowledge management and philosophical theory is a fairly intimate one. Some of the most significant and influential works in KM explicitly appeal to a number of philosophers and philosophical theories. From a perusal of the seminal works some of the groundbreaking theorists in KM, in particular Sveiby, Nonaka and Takeuchi, it is clear that the application of philosophical insights has laid the groundwork for much of their pioneering work in knowledge management.

K. E. Sveiby (1994, 1997, 2001) mentions the works of many philosophers in his discussions on the nature of KM. Most particularly, Sveiby appeals directly to the works of both Polanyi and Wittgenstein in his explanation and investigation into the grounding of knowledge management. Polanyi's idea of *tacit knowledge* is also central to Sveiby's understanding of KM – for Sveiby the business of managing our tacit knowledge resources is the main aim of KM. Sveiby also mentions Wittgenstein's approach to meaning and knowledge, which he sees as being closely related to Polanyi's, although he doesn't go into the details of how these ideas relate to his views on KM.

Nonaka (1994), Nonaka and Takeuchi (1995) mention a wide array of philosophers, and a range of different philosophical perspectives in their influential works on KM. Chapter 2 of Nonaka and Takeuchi (1995) includes an extended discussion on the history of philosophy from Plato and Aristotle, through Descartes and Locke; Kant, Hegel and Marx; Husserl, Heidegger, Sartre, Merleau-Ponty, Wittgenstein, James and Dewey. They also mention Herbert Simon, Gregory Bateson, and also pay particular attention to the Polanyi's ideas about tacit knowledge. They also briefly mention a number of other philosophical works, such as Johnson-Laird's (1983) *Mental Models*, Fred Dretske's (1981) *Knowledge and the Flow of Information*, as well as Shannon's information theory. Interestingly Nonaka and Takeuchi recognise some of the limitations of these philosophical theories. For example, they make the point that these approaches are inherently limited when it comes to explaining organizational knowledge creation – they claim it leaves out *innovation*.

A number of other important philosophical figures are mentioned in the KM literature. Adding these names to those already mentioned give a long and distinguished list of thinkers who have contributed, albeit indirectly, to the present understanding of Knowledge Management:

- Gilbert Ryle (1940-50s): the distinction between *knowing that* and *knowing how*.
- Michael Polanyi (1966): *tacit knowledge*
- Ludwig Wittgenstein (1920s): *meaning is use*
- Michel Foucault (1970s): *knowledge is power*
- Thomas Kuhn (1970s): paradigms
- Karl Popper (1960s): *three worlds*.
- Jean-François Lyotard (1984): *The Postmodern Condition* – data, information, knowledge.
- Jürgen Habermas (1984): *The Theory of Communicative Action, Volume One: Reason and the Rationalization of Society*
- Charles Sanders Peirce (1839-1914) and other American pragmatists (James, Dewey, Rorty)

Clearly the field of KM is deeply indebted to the ideas of many philosophers: definitions, categorisations, and distinctions to do with the term “knowledge” are derived directly from the work of many philosophers. Such philosophical theories certainly seem central to the foundations of KM – but in what way are they significant, and why?

Despite this widespread appeal to philosophers and philosophy I feel that the actual connection between philosophical theory and the practical details of KM is rather weak. The problem is that it isn’t clear how the philosophical ideas actually contribute to the theoretical understanding of how to go about doing KM. For example, in Nonaka and Takeuchi (1995) although there is quite a lot of discussion of philosophers and philosophy in the early chapters, when they move on to discussing the practical details of KM there is little or no connection made back to the philosophical ideas they previously mention. In particular, there is little explicit appeal to philosophical ideas made in their practical discussion on how one goes about the business of knowledge management. It is almost as though the philosophical discussion is presented more for peripheral interest, rather than as providing deep insight into the discussion of KM. Thus it isn’t clear how the philosophical ideas provide more than just the introductory context for their discussions on KM. In particular, it isn’t clear how any of their appeals to philosophy relate to their practical suggestions, and thus it isn’t clear what sort of philosophical basis exists for their KM framework. Thus it is worth looking in more detail at the actual connection between philosophy and KM – looking at how each discipline defines knowledge, why the concept is significant for each discipline, and what each discipline says about the concept.

Here it is worth emphasising that my discussion will focus primarily on the relationship between KM and philosophy as it is practiced within the Western Analytic tradition. Thus the “philosophers” I refer to here are those working within the Western Analytic tradition of philosophy, and when I use the term “philosophy” I am generally referring to this tradition. This tradition traces back to the ancient Greek philosophers, and has been deeply influenced by philosophers such as Descartes; the British Empiricists Hume and Locke and the German Idealist Kant; early twentieth century philosophers such as Frege, Russell, and Wittgenstein; and modern American philosopher such as

Quine, Davidson, Kripke, and Rawls. This tradition contrasts with what is often called the “Continental” tradition in philosophy, which flows through the work of thinkers such as Nietzsche, Hegel, Heidegger, Husserl, Derrida and Levinas. This has similar roots to the analytic tradition, but diverges sharply in terms of both methodology and the sorts of questions it tackles. Some have characterised the difference as follows: the analytic tradition is narrow but deep, aiming for argumentative clarity and precision, while the continental tradition is broad but shallow, being more concerned with actual political and cultural issues and the human situation more generally.

My reasons for focusing on the Western Analytic tradition rather than the Continental tradition are twofold. Firstly, much of the KM literature does actually appeal to this tradition, in particular to the Cartesian account of knowledge and its successors. Thus the relationship between these disciplines clearly is worthy of analysis. The second and more important reason is that I believe the Analytic tradition can provide important insights for KM, which may conflict with some of the approaches endorsed in the Continental tradition. Interestingly, some of the most useful philosophical insights for KM have come from the continental tradition, since that approach tends to look more broadly at the social, political and pragmatic concerns surrounding a concept, which can tend to get overlooked in the fine-grained, logically precise approach of the analytic tradition. However I feel that the Continental approach tends to deal with questions that are too broad even for the concerns of KM, and in doing so loses the important connection between knowledge and truth. In this regard, at the end of this section I shall argue that the analytic approach to these questions can provide KM with some important guidance.

One thing that immediately strikes an analytic philosopher when they first encounter the KM literature is the way the term “knowledge” is used. When philosophers talk about “knowledge” they tend to mean something quite different to what KM authors refer to as knowledge. Philosophers have typically defined knowledge as an essentially *personal* item that concerns true facts about the world: knowledge is an individual’s *true, justified belief*.<sup>4</sup> Knowledge involves more than someone *believing* a certain fact about the world: to genuinely know something you must believe it, you must have good justification for believing it is true, and it must actually be true. Thus traditional approaches to epistemology – the theory of knowledge – are concerned primarily with *what* knowledge is and how it can be identified, rather than *how* knowledge is created or used.

This approach to defining knowledge contrasts markedly with the definitions typically proposed in the KM literature. For example, in an introductory text on Knowledge Management Rumizen defines knowledge as “Information in context to produce actionable understanding.” (2002: 6, 288) Similarly, Davenport & Prusak define knowledge thus:

“Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in the documents or repositories but also in organizational routines, processes, practices, and norms.” (1998: 5)

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<sup>4</sup> This formal definition of knowledge is quite controversial, and is the subject of ongoing vigorous debate. However philosophers tend to agree that this definition is *roughly* correct, and the controversy is mainly over the fine details of this approach.

These definitions do not view knowledge as essentially personal true, justified belief, but instead have a notion of knowledge as a practical tool for framing experiences, sharing insights and assisting with practical tasks. For KM, knowledge is something other than just an individual's understanding of the true facts of the world – it is a *pragmatic* tool for manipulating and controlling the world. It is in this sense that Iivari proposes the following four theses about knowledge:

- Knowledge is communal.
- Knowledge is activity-specific.
- Knowledge is distributed.
- Knowledge is cultural-historical. (Iivari 2000: 261)

From the perspective of traditional epistemology, this approach to defining knowledge sounds decidedly odd. Approaching these theses as an analytic philosopher it is difficult to understand the connection between this conception of knowledge and the concept of knowledge as philosophers have typically defined it. If knowledge is essentially personal, how can it then be communal or distributed?

The differences can be best explained by understanding the different ways the two disciplines have approached the problem of defining knowledge, and understanding why the disciplines are interested in the concept of knowledge in the first place. Philosophers have generally focussed on the problem of identifying and justifying our knowledge. In contrast, KM has focused not so much on the justification of knowledge, but instead on understanding the uses of knowledge in order to effectively deal with the practical tasks that involve knowledge-based activity. In turn, the disciplines of philosophy and KM have approached the question of defining knowledge in a fundamentally different way. The main difference lies in the fact that philosophers have been concerned primarily with the problem of *scepticism*, whereas KM has looked at knowledge in terms of *pragmatics*. This is a fundamental difference, and it leads to quite different conceptions of the definition and importance of knowledge.

The personal aspect of knowledge is something that arises from the way philosophers have approached the question of what constitutes genuine knowledge. Contemporary debates in epistemology essentially trace back to the work of René Descartes and his method of doubt. In his *Meditations on First Philosophy* (1640) Descartes undertakes an inquiry into the nature of knowledge. Here Descartes attempts to find the foundational principles upon which our knowledge rests, by trying to identify some sort of fact that we can be entirely certain of. Thus he advocates that we need “to demolish everything completely and start again right from the foundations” (Descartes 1996:12). For Descartes the real challenge here is scepticism – if there is any possibility of doubt about so-called knowledge being true then it cannot be genuine knowledge. Descartes’ inquiry tries to ascertain just what facts about the external world are beyond scepticism, in order to discover the basis of all our knowledge. Following this methodology Descartes famously arrives at the proposition “*cogito ergo sum*” – I think therefore I exist – which he claims puts the proposition “I exist” beyond doubt. Contemporary epistemology has followed strongly in this Cartesian tradition, focusing on the question of the justification of knowledge in the face of scepticism. Because of this, questions about the actual generation of knowledge, and of the uses and contexts of knowledge, have been of peripheral concern for the majority of theorists in epistemology.

In clear contrast to this, KM is concerned precisely with these sorts of pragmatic questions. For KM knowledge must be far more than just personal certainty about the world – it must involve practical ability as well as conceptual understanding. More importantly, KM is concerned with far more than just the justification of knowledge – it is concerned with the production, storage and processing of knowledge in a group or shared sense. Thus the relevance of the concept of knowledge for KM is quite different to its relevance for philosophers.

The point I wish to emphasise here is that, as far as KM is concerned, there are significant limitations in traditional approaches to epistemology. Traditional epistemology focuses on questions of *individual* or *personal* knowledge, with the main issue being how we come to know something as an individual – reliance on sense-data, experience, testimony, etc. As such, philosophers have done an excellent job of defining knowledge in this sense. However traditional epistemology is not concerned with the production and processing of knowledge in a group or shared sense – it is not really concerned with the *pragmatics* of knowledge production and use. The main issue in epistemology is the status of the final product rather than the process of getting there and what happens after knowledge is acquired. Yet these are precisely the factors that are of interest for KM.

The upshot of this is that, beyond an initial analysis of what knowledge is, this traditional approach to epistemology can actually offer very little in the way of useful insights for KM. Thus we must look elsewhere to find useful contributions from philosophy. We must also be sensitive to the different senses of the word “knowledge” as it is used by philosophers, and understand that KM applies a very particular conception of knowledge. This really shouldn’t be surprising news for people working in KM, for I think this is a point most KM theorists are actually quite aware of. Yet, despite this awareness, it is a point that is often overlooked, especially in the introductory literature, and this could generate some serious confusion for someone coming to KM for the first time.

There is however one very important lesson for KM that should be drawn from this discussion: KM should not dismiss the importance of the philosophical insights into the nature of knowledge. Although the different disciplines have fundamentally different interests in the concept of knowledge, the concepts in each discipline are still very closely related. The standard approach in epistemology may be too limited and too narrow for KM, but it also isn’t totally irrelevant. At its foundation the KM conception of knowledge should at least be *compatible* with the epistemological definition, since even though the disciplines have different interests in the concept at its base it is still essentially the same idea.

This point harks back to my emphasis on the Western Analytic tradition rather than the Continental tradition. Here my feeling is that the KM conception of knowledge has diverged too far from the epistemological roots of the concept of knowledge and needs to be reigned back in. It is on this point that lessons should be taken from the Analytic philosophical tradition: traditional epistemology emphasises that genuine knowledge must be true. Although the philosophical definition of knowledge as being *true, justified belief* is not without controversy, it is fairly clear that something cannot be knowledge without it having some strong connection with the real facts of the world. How can you genuinely know something without that knowledge being true and accurate? You can’t *know* that aliens live amongst us if there are in fact no aliens. However the way “knowledge” is defined in the KM literature it appears to have lost the specific

connection with the idea of *truth*. The problem is that according to the KM definition it is more like the concept of *belief* – these definitions seem to have lost sight of the importance of justification and truth also being necessary for knowledge.

Take for example Rumizen's definition of knowledge: "Information in context to produce actionable understanding." (2002: 6, 288) Now if something cannot be called "information" without it being true then this definition seems fairly acceptable, at least from the viewpoint that knowledge must have some connection with truth. But we often use the word "information" in a far looser way than this, which admits the possibility that information may be false. Thus it makes sense to say that someone can base a (false) belief on *false information*. However we tend to think that someone cannot have false knowledge – in this case we would just say that someone doesn't know anything since what they thought they knew was false. More importantly, it seems possible for something to meet this definition without being genuine knowledge, since it may be possible for false information to "produce actionable understanding" – what you do may work, but that may just be a matter of sheer luck.

Similar sorts of worries apply to Davenport & Prusak's definition of knowledge: "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information." (1998: 5) This definition seems even more problematic than Rumizen's, since defining knowledge as "framed experience" allows almost any human belief to be a form of knowledge, whether or not it is an accurate or true belief. Following this definition I could "know" that aliens live amongst us, that Elvis is still alive, that AIDS was sent by God to punish infidels, or that human DNA was created by aliens by cloning.

Now maybe KM is actually interested in a conception of "knowledge" that allows spurious or unjustified claims such as these to be genuine knowledge. Perhaps KM should be concerned with managing all forms of belief in all belief systems, and not just with true beliefs. In other words, maybe Knowledge Management should really be called *Belief Management*? To do so, however, I believe would be a mistake. The important point here is that KM should be concerned with *relevant* and *applicable* knowledge, and I claim that any thorough conception of knowledge as such must maintain a connection with truth. This is because, at its base, knowledge must be grounded in real world properties and processes, even though our conceptions of these may be socially constructed in some sense.

To some, especially those grounded in the Continental or hermeneutic approach to knowledge, these ideas will seem extremely contentious. In particular, my emphasis on truth may seem misplaced, especially if one wishes to emphasise the idea of knowledge as a social practice. To those with these intuitions my response is that the social conception of knowledge is not only compatible with the idea of knowledge as truth, but is required for a thorough analysis of the production of knowledge in science. This is a point emphasised by a number of recent philosophers such as Hacking (1999) and Kitcher (1993, 2001), who have explored these ideas, showing how one can reconcile the idea of knowledge as a social practice with the conception of knowledge as true, justified belief. Hacking in particular, argues that social constructivism does not conflict with appeals to truth, and that we can have a rich social understanding of many concepts, both scientific and social, without losing the important connection with real world properties and processes.

The reason that an appeal to realism and truth is compatible with a social conception of knowledge is that it does not deny the fact that social factors are real. An excellent example that illustrates this point perfectly is the way we talk about economics and finance. There is a sense in which *money* is purely a social construct – the concept only acquires its significance through social convention and agreement. There is no money in nature. Yet money is also quite real, and all our talk of interest rates, budgets, financial markets, etc. is clearly about real entities as opposed to purely fictional entities. For example, when I say that the \$AUS to \$US exchange rate is 0.67 I am making a real factual claim about the world, even though this is a socially constructed fact. Importantly, this claim can be true or false, and the truth value of this claim can make a significant practical difference – if, for example, I was a bank teller. It is the importance of truth in this sense that I wish to emphasise for a philosophical understanding of knowledge for KM. An appeal to truth does not deny the importance of culture or interpretation or understanding. All it involves is an ultimate appeal to some real facts about the world.

The overall point here is that there need not be any conflict between social constructivism and knowledge as truth – indeed, a connection to the truth seems an essential part of even a social account of knowledge. Thus I plead the KM maintains a connection with genuine knowledge, and not just belief.

### **3. RELEVANT PHILOSOPHY – PHILOSOPHY OF SCIENCE AND SOCIAL EPISTEMOLOGY**

I have said that traditional epistemology can only be of limited use to KM since it focuses on the origins and justification of personal knowledge, rather than the pragmatics of knowledge use, sharing and dissemination. Since KM is primarily concerned with knowledge as it is generated, shared, stored and used within a collaborative environment, if we are to look to philosophical theory to provide a foundation for the tasks of KM, we must look for those areas that can deal with these practical issues, as well as provide insights into these differing forms of knowledge and the relationships between them. The philosophical theory must also help our understanding of the underlying *processes* that are relevant for KM.

Here my suggestion is that the most fruitful places to look for relevant philosophical insights for KM is in recent work in both the *philosophy of science* and the emerging field of *social epistemology*. Although there are still limitations associated with these philosophical theories, these areas are engaged with fairly similar questions to those that interest knowledge management, and can thus provide insights into these issues. Thus they should be able to provide some useful theoretical tools that can be applied to building a theoretical account of knowledge work.

There is already a strong tradition within KM of applying insights from the philosophy of science. In particular the works of Kuhn (1970) and Popper (1959, 1972) have been of great interest to a number of KM theorists. Kuhn's notion of a *paradigm*, a particular world view, has played a pivotal role in understanding how a community of thinkers – or *knowledge workers* – need to share certain base beliefs in order to work together effectively. Kuhn's ideas on incommensurability have also been extremely important for many KM theorists. Popper's insights into the basis of scientific knowledge have also helped enrich the understanding of KM. However KM has paid very little attention to more recent developments in the philosophy of science, which take a quite

different approach in their investigations. The trend in the philosophy of science over recent years has been to shift from trying to develop a general account of what science is (as evident in the work of Popper and Kuhn), to looking more closely at the fine detail of science. These fine details concern the complex methods by which scientific theories are developed, in terms of how scientists work, reason, *experiment*, *collaborate*, etc. Thus Cartwright (1989a, 1989b) emphasises the importance of *causal capacities* in science, and Dupré (1993) explores the metaphysical implications of the disunity of perspectives that coexist across the ranges of sciences. The detailed work of Galison (1996, 1997) looks at the role of social dynamics and politics in the theoretical life of nuclear physicists. Hacking (1999) also explores these issues in some detail, showing how the social construction of the world does not entail losing contact with traditional epistemological ideals such as accuracy and truth. Finally, Kitcher (1993) develops a complex model of scientific reasoning in a collaborative environment, that factors in the interactions between different researchers in building up a detailed picture of knowledge production in group context.

This approach is in sharp contrast to current approaches in knowledge management. At present, much of the work in KM has been informed and influenced by studies in the philosophy and sociology of science, such as those by Latour and Woolgar (1986) and Charlesworth *et al.* (1989). However, while these are excellent sociological accounts of collaborative knowledge work environments, they are based in a problematic metaphysics of social constructivism that fails to maintain the link between knowledge and truth. In particular, my concern is that these approaches provide a weak metaphysical foundation for such research, and do not provide a clear enough account of the underlying processes at work in knowledge production and knowledge-using environments. Here the approaches of experimentally focuses of philosophers of science such as Galison and Kitcher can be of assistance, as they emphasise taking into account *all* the relevant cognitive factors, including social dynamics and collaborative factors, in a complete analysis of knowledge production.

The other promising area of philosophical inquiry is the emerging field of social epistemology. This is actually fairly closely related to the approaches in philosophy of science just discussed, and many of the same people are working in this field. Some of the most significant works in this field include Kitcher (2001), Longino (2001), Solomon (2001), Goldman (1999) and Turner (1994, 2002). Social epistemology is an extension of traditional epistemology, which adds in the relationship between the social and rational factors in its analysis of the knowledge production process.

While there is still much debate within social epistemology about the importance of truth and the significance of relativism (especially between Longino and Kitcher) it is clear that these approaches could support a theory of collaborative knowledge work within a *realist* and *pluralist* metaphysical framework (as outlined in Cartwright, 1999). This would acknowledge the significant social dimension in knowledge production, while retaining the idea of knowledge being deeply connected to real properties and processes. Thus applying insights from the social epistemology will make it possible to build a theory of knowledge work that is grounded in reality, but also incorporates the relevant social, practical, and pragmatic concerns that are central to the tasks of knowledge management. The starting point of such an analysis would be to determine precisely what aspects of knowledge are relevant to the enterprise of knowledge management, and to give an account of the factors that underlie these knowledge components. This will involve assessing the relevant cognitive, social and pragmatic factors involved in KM

projects. This will develop into a theoretical foundation for the practical work done in KM that maintains a connection with real-world processes and properties. Such a foundation will avoid the problematic conclusion that knowledge is purely socially constructed, and thus will present a powerful analysis of knowledge work.

However, in terms of the aims of knowledge management, current approaches in the philosophy of science and social epistemology are still somewhat lacking. As they stand they provide a detailed account of knowledge *production*, but little or no account of knowledge *use*. Thus, at present, they have little to say about the pragmatics of knowledge storage, knowledge sharing, and knowledge dispersal, all essential aspects of knowledge management projects.

Part of the problem here is that philosophers just don't seem to be interested in the sorts of questions that are essential for KM. Philosophers are still largely stuck in the Cartesian paradigm, obsessed with understanding the origins and justification of knowledge rather than the dynamics of knowledge as a process. Here we can actually turn things around and look to KM to provide some inspiration for philosophy. The challenges posed by KM projects can be used to show how these issues are indeed significant ones, which need to be investigated in detail. The insights gained from current KM projects can also be fed back into the philosophical theory. This will involve extending the accounts of collaborative knowledge production, as provided by philosophy, to broader accounts of collaborative knowledge use. This is where the practical dimension of KM can actually help to enrich our philosophical understanding of the nature of knowledge, and thereby lead to stronger approaches to KM grounded in coherent and sound philosophical theory.

## REFERENCES

- Cartwright, N. 1989a. *Nature's Capacities and their Measurement*. Oxford: Clarendon Press, .
- Cartwright, N. 1989b. "Capacities and Abstractions." From Kitcher, P. and W. C. Salmon (eds.) *Scientific Explanation, Minnesota Studies in the Philosophy of Science, Volume 13*. pp. 349-356. Minnesota: University of Minnesota Press.
- Cartwright, N. 1999. *The Dappled World*. Chicago: University of Chicago Press.
- Charlesworth, M., Lyndsay Farrall, Terry Stokes, David Turnbull. 1989. *Life among the scientists : an anthropological study of an Australian scientific community*. Melbourne: Oxford University Press
- CIO.com 2002. "Knowledge Management" (May 2003) <http://www.cio.com/summaries/enterprise/knowledge/>
- Davenport, T and Prusak, L. 1998. *Working Knowledge: How organisations manage what they know*. Boston, Mass.: Harvard Business School Press
- Descartes, René. 1996. *Meditations on First Philosophy*, translated by John Cottingham. (originally published 1640) Cambridge: Cambridge University Press.
- Dretske, F. 1981. *Knowledge & the Flow of Information*. Cambridge, Mass.: MIT Press.
- Dupré, J. 1993. *The Disorder of Things: Metaphysical Foundations of the Disunity of Science*. Cambridge, Mass.: Harvard University Press.
- Friedman, M. 2001. *Dynamics Of Reason*. Stanford, Calif.: CSLI Publications
- Galison, P. 1996. "Computer Simulations and the Trading Zone." From Galison, P. and D. Stump (eds.) 1996. *The Disunity of Science: Boundaries, Contexts, and Power*. pp. 118-157. Stanford: Stanford University Press.
- Galison, P. 1997. *Image and Logic*. Chicago: University of Chicago Press.
- Goldman, A. I. 1999. *Knowledge in a Social World*. Oxford: Clarendon Press.
- Gordon, J.L. & Smith, C. 1998. "Research: Knowledge Management Guidelines" (May 2003) <http://www.akri.org/research/km.htm>
- Hacking, I. 1983. *Representing and Intervening*. Cambridge: Cambridge University Press.
- Hacking, I. 1999. *The Social Construction of What?* Cambridge, Mass.: Harvard University Press.

- Hume, D. 1888. *A Treatise of Human Nature*. (1960 facsimile reprint, edited by L. A. Selby-Bigge.) Oxford: Oxford University Press.
- Iivari, J. 2000. "Reflections on the Role of Knowledge Management in information Economy" In Burnstein & Linger (eds.) 2001. *Knowledge Management for Information Communities*. Australian Conference for Knowledge Management and Intelligent Decision Support, Melbourne, Australia, 2000.
- Kitcher, P. 1993. *The Advancement of Science*. Oxford: Oxford University Press.
- Kitcher, P. 2001. *Science, Truth, and Democracy*. Oxford: Oxford University Press.
- Kuhn, T. 1970. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Kuhn, T. 1977. *The Essential Tension: Selected Studies in Scientific Tradition and Change*. Chicago: University of Chicago Press.
- Latour, B. and Woolgar, S. 1986. *Laboratory Life; The Construction of Scientific Facts*. Princeton, N.J.: Princeton University Press.
- Linger and Burnstein, 2000. "Implementing a knowledge Management System: The Case of Meteorological Forecasting" In Burnstein & Linger (eds.) 2001. *Knowledge Management for Information Communities*. Australian Conference for Knowledge Management and Intelligent Decision Support, Melbourne, Australia, 2000.
- Longino, H. 2001. *The Fate of Knowledge*. Princeton, N.J.: Princeton Uni Press.
- Lyotard, Jean-François. 1984. *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press.
- Nonaka. 1994. "A Dynamical Theory of Organizational Knowledge Creation" *Organization Science*, Vol. 5, No. 1.
- Nonaka and Nishiguchi (eds.) 2001. *Knowledge emergence: Social, technical, and evolutionary dimension of knowledge creation*. Oxford: Oxford University Press
- Nonaka and Takeuchi. 1995. *The knowledge creating company*. Oxford: Oxford University Press
- Polanyi, M. 1966. *The Tacit Dimension*. Gloucester, Mass.: Peter Smith (Reprinted 1983)
- Popper, K. 1959. *The Logic of Scientific Discovery*. London: Hutchinson.
- Popper, K. 1972. *Objective Knowledge*. Oxford: Oxford University Press.
- Ruggles, R. L. (ed.) (1997) *Knowledge Management Tools*. Boston: Butterworth-Heinmann.
- Rumizen, M. 2002. *The Complete Idiot's Guide to Knowledge Management*. Hemel Hempstead: Prentice Hall, 2001
- Ryle, G. 1949. *The Concept of Mind*. Chicago: University of Chicago Press.
- Solomon, M. 2001. *Social Empiricism*. Cambridge, Mass.: MIT Press.
- Sveiby, K-E. 1994. *Towards a Knowledge Perspective on Organisation*. Doctoral Dissertation 1994 University of Stockholm S-106 91 Stockholm. <http://www.sveiby.com/articles/Towards.htm>
- Sveiby, K. E. 1997. *The New Organizational Wealth - Managing & Measuring Knowledge Based Assets*. San Francisco. Berrett Koehler
- Sveiby, K. E. 2001. "What is Knowledge Management" Accessed in May 2003 from <http://www.sveiby.com> <http://www.sveiby.com/articles/KnowledgeManagement.html>
- Turner, S. 1994. *The Social Theory of Practices: Tradition, Tacit Knowledge and Presuppositions*. Chicago: University of Chicago Press.
- Turner, S. 2002. *Brains/Practices/Relativism*. Chicago: University of Chicago Press.